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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,603	06/30/2004	Honami Oosawa	NIS-15538	4750
40854	7590	11/03/2005	EXAMINER	
RANKIN, HILL, PORTER & CLARK LLP 4080 ERIE STREET WILLOUGHBY, OH 44094-7836			HANAN, DEVIN J	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/500,603

Applicant(s)

OOSAWA ET AL.

Examiner

Devin Hanan

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/30/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/10/2005</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Liao et al. (U.S. Patent 6,540,479).

Liao et al. discloses axial-flow fans with double impellers comprising: a first axial-flow fan unit comprises:

a first case (400) including therein an air channel having a suction opening portion on one of axial-end sides thereof and a discharge opening portion on the other axial-end side thereof, and a first impeller (21) having a plurality of blades and being adapted to rotate in the suction opening portion;

and a second axial-flow fan unit comprises; a second case (500) including therein an air channel having a suction opening portion on one of axial-end sides thereof and a discharge opening portion on the other axial-end side thereof, and a second impeller (31) having a plurality of blades and being adapted to rotate in the discharge opening portion; wherein the first case of the first axial-flow fan unit and the second case of the second axial-flow fan unit are combined through a coupling structure (figure 2 shows the different casings uncoupled);

wherein the coupling structure comprises: two kinds of engaged portions (52 and 53) provided at an end portion surrounding a periphery of the discharge opening portion of the first case of the first axial-flow fan unit; and two kinds of engaging portions (42 and 44) provided at an end portion surrounding a periphery of the suction opening portion of the second case of the second axial-flow fan unit and adapted to engage with the two kinds of engaged portions;

wherein the two kinds of engaging portions and the two kinds of engaged portions include;

a first kind of the engaging portions and a first kind of the engaged portions together forming a first kind of engaging structure (44 goes into 53), the first kind of engaging structure being adapted to resist a separation operation when the first case and the second case in a coupled state are subjected to the separation operation which acts to axially separate the first case and the second case, the first kind of engaging structure being also adapted to resist a first rotation operation (capable of resisting rotation operations) when the first case and the second case in a combined state are subjected to the first rotation operation which ads to rotate the first case about an axis relative to the second case in one of two rotating directions;

and a second kind of the engaging portions and a second kind of the engaged portions together forming a second kind of engaging structure (42 inserts into 52), the second kind of engaging structure being adapted to resist a second rotation operation (capable of resisting rotational operations regardless of rotational direction) when the first case and the second case in a coupled state are subjected to the second rotation

operation which acts to rotate the first case about the axis relative to the second case in the other direction opposite to the one direction.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tzeng et al. (6,799,942) in view of Bradbury et al. (U.S. Patent 6,565,334).

Tzeng et al. discloses an axial-flow fan with double impellers comprising:

a housing (11 and 21) having an air channel therein, the air channel having a suction opening portion on one of axial-end sides thereof and a discharge opening portion on the other axial end side thereof;

a first impeller (12) having a plurality of front blades and being adapted to rotate in the suction opening portion;

a first motor (14) to rotate the first impeller about an axis of the fan in one of two rotating directions;

a second impeller (22) having a plurality of rear blades and being adapted to rotate in the discharge opening portion;

a second motor (col. 2 lines 59-65) to rotate the second impeller about the axis in the other rotating direction opposite to the one direction; and

a plurality of stationary blades radially extending and arranged stationary in the housing between the first impeller and the second impeller (15 and 25);

Tzeng et al. does not disclose that the number of the front blades is five, the number of the stationary blades is three and the number of the rear blades is four.

However, Bradbury et al. teaches for changing the number of impeller blades in order to optimize the flow output (col. 9, lines 19-22).

Since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980)), it would have been obvious to a person having ordinary skill in the art at the time the invention was made to optimize the fan of Tzeng et al. to have the number of the front blades to be five, the number of the stationary blades to be three and the number of the rear blades to be four in order to optimize flow output (col. 9 lines 19-22).

Regarding claims 2 and 6, the modified apparatus of Tzeng et al. discloses all of the claimed limitations discussed in claims 1 and 5, respectively, above and that the front blades are curved in the transverse cross section, open in one direction and the rear blades and stationary blades are curved in the transverse cross section, open in the other direction (see figure 5).

Regarding claims 3 and 7, the modified apparatus of Tzeng et al. discloses all of the claimed limitations discussed in claims 2 and 6, respectively, above and that the first and second impellers have annular peripheral walls surrounding the axis to which the blades are mounted (13 and 23).

Regarding claims 4 and 8, the modified apparatus of Tzeng et al. discloses all of the claimed limitations discussed in claims 3 and 7, respectively, above and that the rotating speed of the second impeller is capable of being less than the rotating speed of first impeller (two driving devices can be individually varied to change the rotational speeds).

Regarding claim 5, the modified apparatus of Tzeng et al. discloses all of the claimed limitations discussed in claim 1 above and a plurality of webs on the first (15) and second (25) casing units which combine to form a plurality of stationary blades.

### ***Allowable Subject Matter***

Claims 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Prior Art***

The patent to Horng et al. (U.S. Patent 6,827,549) was cited for its teaching of two engaging/engaged portions to connect two casings.

### ***Conclusion***

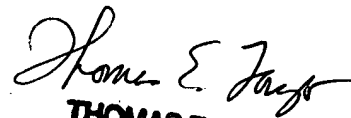
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Devin Hanan  
Patent Examiner  
Art Unit 3745



**THOMAS E. LAZO**  
**PRIMARY EXAMINER**